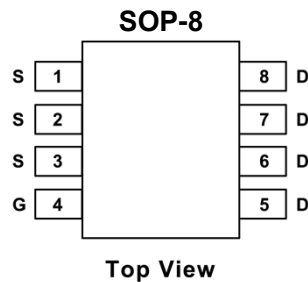
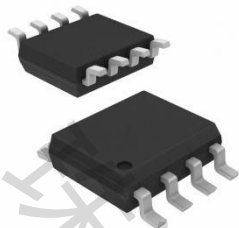


AO4406A-HX

N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V _{DS} (V)	R _{DS(on)} max	I _D (A)
30	10m @ V _{GS} = 10V	13

**FEATURES**

- TrenchFET® Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested

APPLICATIONS

- Notebook CPU Core
- High-Side Switch

Absolute Maximum Ratings

	Parameter	Max.	Units
V _{DS}	Drain-to-Source Voltage	30	V
V _{GS}	Gate-to-Source Voltage	± 20	
I _D @ T _A = 25°C	Continuous Drain Current, V _{GS} @ 10V	13	A
I _D @ T _A = 70°C	Continuous Drain Current, V _{GS} @ 10V	10	
I _{DM}	Pulsed Drain Current	100	
P _D @ T _A = 25°C	Power Dissipation	2.5	W
P _D @ T _A = 70°C	Power Dissipation	1.6	
	Linear Derating Factor	0.02	W/°C
T _J T _{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

	Parameter	Typ.	Max.	Units
R _{θJL}	Junction-to-Drain Lead		20	°C/W
R _{θJA}	Junction-to-Ambient		50	


Static @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30			V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta BV_{DSS}/\Delta T$	Breakdown Voltage Temp. Coefficient		0.025		V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance		8.0	10	m Ω	$V_{GS} = 10V, I_D = 13A$
			10.5	13		$V_{GS} = 4.5V, I_D = 10A$
$V_{GS(th)}$	Gate Threshold Voltage	1.35	1.80	2.25	V	$V_{DS} = V_{GS}, I_D = 25\mu A$
$\Delta V_{GS(th)}/\Delta T$	Gate Threshold Voltage Coefficient		-5.0		mV/ $^\circ\text{C}$	
I_{DSS}	Drain-to-Source Leakage Current			1.0	μA	$V_{DS} = 24V, V_{GS} = 0V$
				150		$V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage			100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage			-100		$V_{GS} = -20V$
g_{fs}	Forward Transconductance	62			S	$V_{DS} = 15V, I_D = 10A$
Q_g	Total Gate Charge		9.5	14	nC	$V_{DS} = 15V$ $V_{GS} = 4.5V, I_D = 10A$ See Fig. 16
Q_{gs1}	Pre-V _{th} Gate-to-Source Charge		3.0			
Q_{gs2}	Post-V _{th} Gate-to-Source Charge		1.0			
Q_{gd}	Gate-to-Drain Charge		3.0			
Q_{godr}	Gate Charge Overdrive		2.5			
Q_{sw}	Switch Charge ($Q_{gs2} + Q_{gd}$)		4.0			
Q_{oss}	Output Charge		5.6		nC	$V_{DS} = 15V, V_{GS} = 0V$
R_G	Gate Resistance		2.3	4.5	Ω	
$t_{d(on)}$	Turn-On Delay Time		8.7		ns	$V_{DD} = 16V, V_{GS} = 4.5V$ $I_D = 10A$ Clamped Inductive Load
t_r	Rise Time		6.3			
$t_{d(off)}$	Turn-Off Delay Time		11			
t_f	Fall Time		3.8			
C_{iss}	Input Capacitance		1210		pF	$V_{GS} = 0V$ $V_{DS} = 15V$ $f = 1.0MHz$
C_{oss}	Output Capacitance		270			
C_{rss}	Reverse Transfer Capacitance		140			

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy		32	mJ
I_{AR}	Avalanche Current		10	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	3.1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode)	—	—	100		
V _{SD}	Diode Forward Voltage	—	—	1.0	V	T _J = 25°C, I _S = 10A, V _{GS} = 0V
t _{rr}	Reverse Recovery Time	—	24	36	ns	T _J = 25°C, I _F = 10A, V _{DD} = 15V di/dt = 100A/μs
Q _{rr}	Reverse Recovery Charge	—	16	24	nC	
t _{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

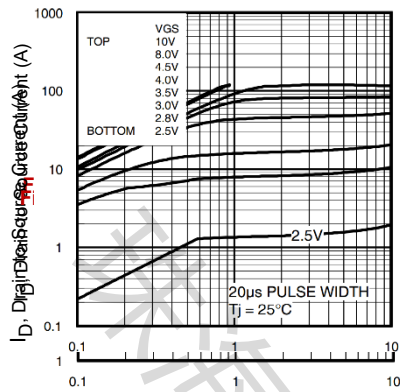


Fig 5. Typical Source-Drain Diode Forward Voltage

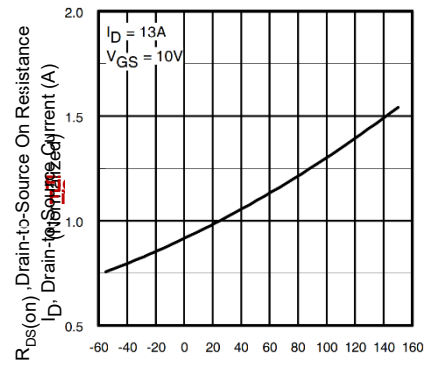


Fig 6. Typical Capacitance Vs. Drain-to-Source Voltage

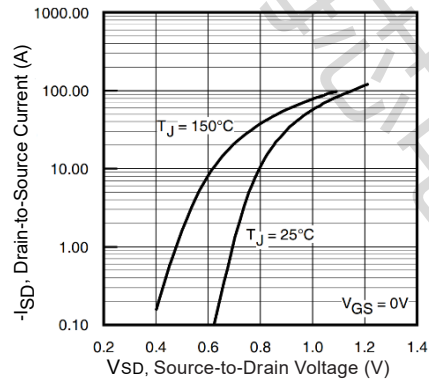


Fig 7. Typical Gate Charge Vs. Gate-to-Source Voltage

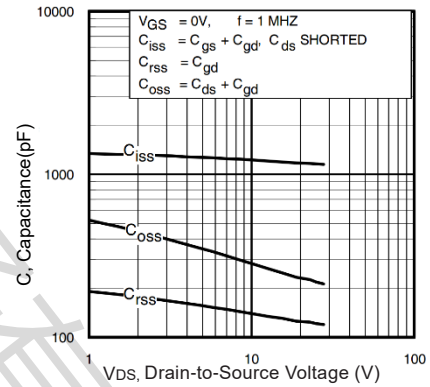


Fig 8. Maximum Safe Operating Area

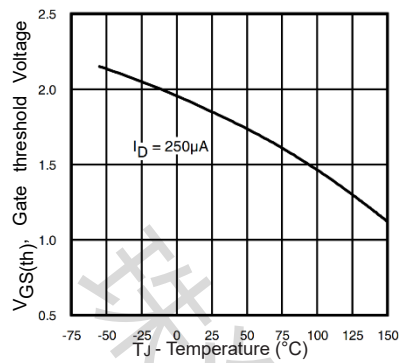


Fig 9. Threshold Voltage vs. Temperature

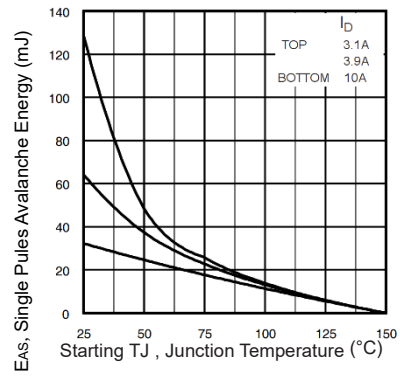


Fig 10. Maximum Avalanche Energy vs. Drain Current

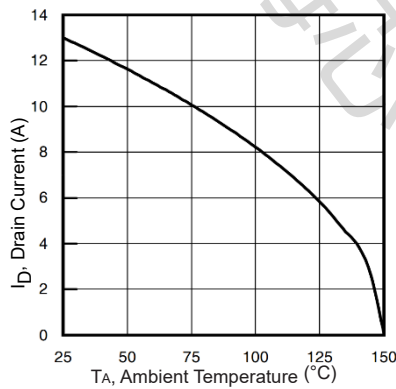
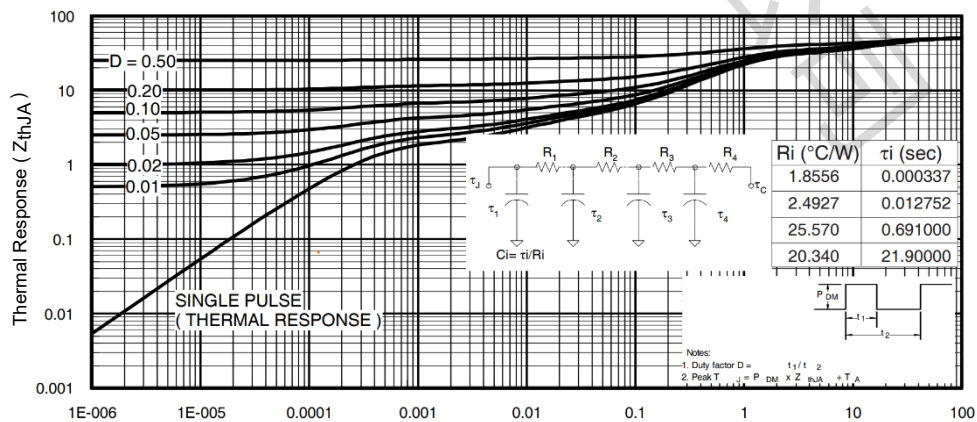
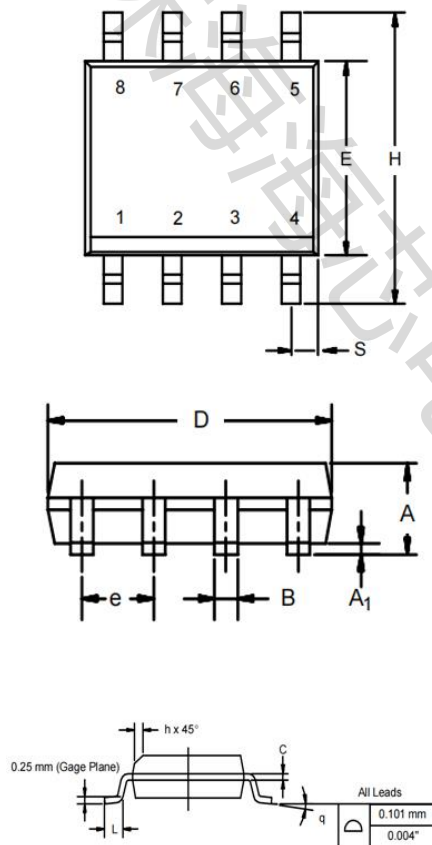


Fig 11. Maximum Drain Current Vs. Ambient Temperature



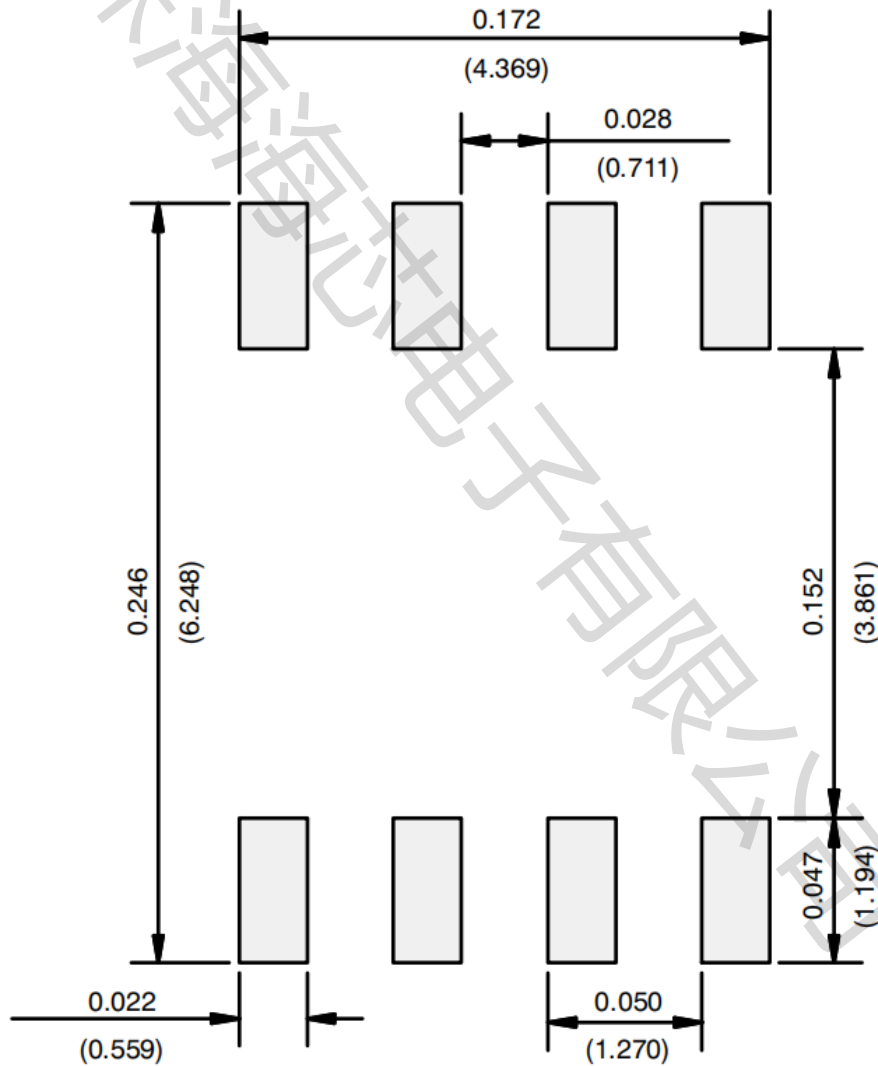
SOP-8 Package Outline

Dimensions are shown in millimeters (inches)



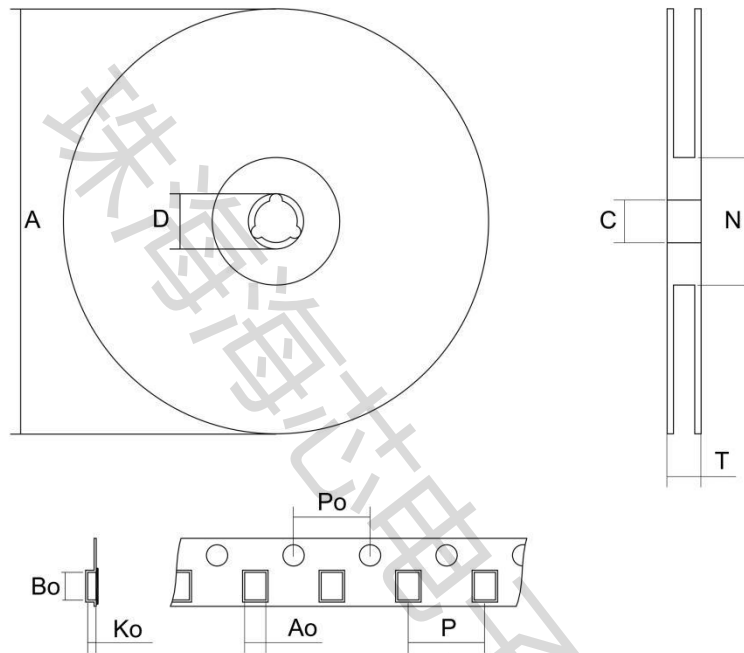
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A ₁	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026

RECOMMENDED MINIMUM PADS FOR SOP-8

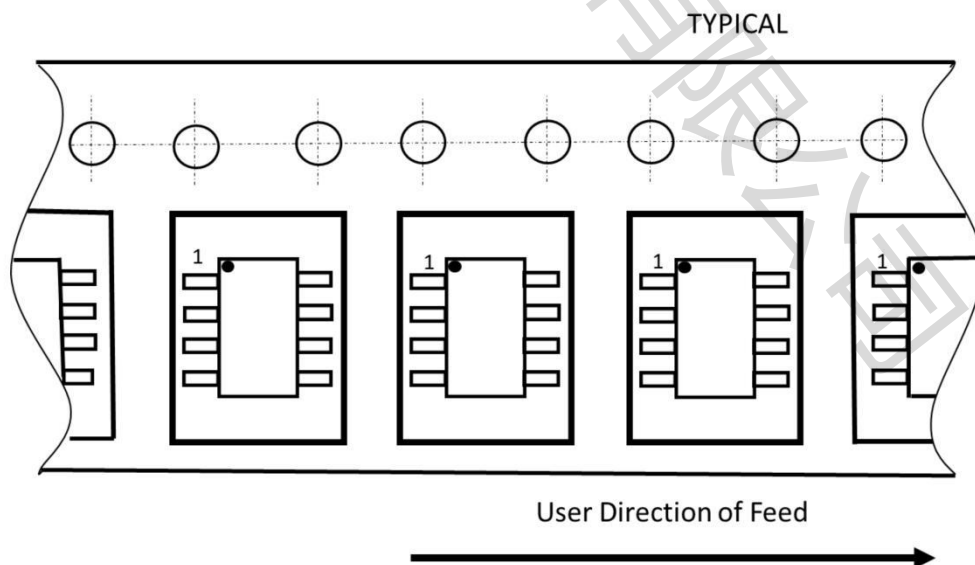


SOP-8 packing information

SOP-8 tape and reel



Tape orientation



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